

Exhibit HH

Silicon Valley is racing to build the next version of the Internet. Fortnite might get there first.

By **Gene Park**

April 17, 2020 at 2:19 p.m. EDT

The next version of the Internet is often described as the Metaverse, a term borne from science fiction, describing a shared, virtual space that's persistently online and active, even without people logging in. It will have its own economy, complete with jobs, shopping areas and media to consume. The Metaverse is inevitable, many believe, and the Silicon Valley C-suite has been obsessed with the idea — as has a video game company in Cary, N.C.

In recent years, there's been serious talk about how to build the Metaverse, and who will build it first. One only needs to witness Facebook and Google's Internet success today, given how both companies dominate digital business, to understand the eagerness with which companies hurry to populate this next frontier. In observing that pursuit, there's the very real possibility that Fortnite, the video game that became a global phenomenon that turned celebrities into players and players into celebrities, has been building the foundations of the Internet's future right before our glazed eyes.

Fortnite's creators at Epic Games have not been shy about this ambition. Its CEO, Tim Sweeney, wants this conversation in public, and has made overt references in the last few years in establishing Fortnite as something more than a game. He's even hinted that this transformation could begin by the end of this year.

"Fortnite is a game," Sweeney tweeted in December 2019. "But ask that question again in 12 months."

Conversation around a more tangible, actualized Internet seems only more pointed in light of our current shelter-in-place reality in response to the coronavirus pandemic. In the past month, office culture has coalesced around video chat platforms like Zoom, while personal cultural milestones like weddings and graduations are being conducted in Nintendo's Animal Crossing: New Horizons. The Metaverse not only seems realistic — it would probably be pretty useful right about now.

Why the Metaverse befits Fortnite

The Metaverse reality is still years, possibly decades, away. But Sweeney has been publicly pushing for its creation, and he isn't alone in his desire to push for the Metaverse, where the online world echoes and fulfills real-world needs and activities. Constructing the virtual Internet space is the macro goal of many in Silicon Valley who are obsessed with Neal Stephenson's 1992 book, "Snow Crash," which defined the term.

In recent years, Facebook, Google and Samsung have all made heavy investments in cloud computing and virtual reality companies in anticipation of a Metaverse. Facebook Horizon, announced in 2019, is a virtual reality social space intended to serve as a Metaverse. Google's shared workspace tools, powered by its cloud computing investments over the years, were all small but significant steps to institutionalize work culture online.

But it's Epic Games, with Fortnite, that has the most viable path forward in terms of creating the Metaverse, according to an essay by venture capitalist and former Amazon executive Matthew Ball. And if today's Internet dystopia scares you, the Metaverse will only make things more complicated. Although Fortnite's entry into the Metaverse race was all by accident, the gaming industry has been tackling the possibility of creating it for years.

"We're seeing this advancement of technology and Internet interaction and the Metaverse coming from gaming because it tends to be at the forefront of something designed for many, and who have the highest [technological] needs," Ball told The Washington Post in an interview.

Gamers, he said, tend to own the most powerful computer processors available to consumers. There's a reason Saddam Hussein famously hoarded PlayStation 2 consoles 20 years ago, and the U.S. military has experimented with creating supercomputers with clusters of PlayStation 3 units.

The most widely agreed core attributes of a Metaverse include always being live and persistent — with both planned and spontaneous events always occurring — while at the same time providing an experience that spans and operates across platforms and the real world. A Metaverse must also have no real cap on audience, and have its own fully functioning economy.

In 2017, Fortnite was created to be a four-player cooperative game about defending a base, a classic popular game type. The Battle Royale mode, which brought the game global success, was grafted on later, after the genre gained ground in the PC market. Through 2018, Fortnite developed a reputation as less of a video game, and more as a Gen Z's preferred social platform.

It has featured live events that have sparked intrigue both in-game (as when cataclysmic events altered the game's map) and in the real world (when the game made headlines by disappearing into a black hole for two days in October to reset its servers for its second chapter). And all of those elements have prompted players to drop hundreds of millions on V-Bucks, Fortnite's in-game currency, which in turn brought Epic hundreds of millions in real-world revenue.

Epic Games never planned for Fortnite to become such a cultural touchstone, not to the point that it inspired everything from World Cup celebrations to Netflix considering the game, not HBO, its biggest competitor.

Fortnite hasn't reached Metaverse status yet. But Fortnite as a social network and impossible-to-ignore cultural phenomenon, Ball says, provides Epic Games a key advantage for leading in the Metaverse race. Fortnite draws a massive, willing and excited audience online to engage with chaotically clashing intellectual properties. For now, it's the only legal place on the Internet where a Netflix-approved avatar of Hopper from "Stranger Things" can twerk on a Disney-approved avatar of Rey Skywalker from Star Wars.

"This organic evolution can't be overemphasized," Ball writes in his essay. "If you 'declared' your intent to start a Metaverse, these parties would never embrace interoperability or entrust their IP. But Fortnite has become so popular and so unique that most counterparties have no choice but to participate. ... Fortnite is too valuable a platform."

Of course, Fortnite isn't the only instance of a game displaying key traits of the Metaverse. Some investors believe Roblox, which allows users to create their own games, will build the Metaverse, as evidenced by a recent \$4 billion valuation, the Wall Street Journal reports. Most recently, the game Minecraft showcased a great example of the online world's flexibility when it comes to intellectual property. International nonprofit Reporters Without Borders chose Minecraft as its venue for millions of publicly censored documents, all archived in a massive 12 million-block library built inside the game over the course of three months.

Signs of the future in the present

The Metaverse is not likely to happen anytime soon. Although Fortnite can draw 10 million people to log on to see DJ Marshmello put on a virtual concert in the game, players would only see 99 other people online. Fortnite matches are limited to only 100 people, so events are populated the same way. The technology to gather millions in one virtual space is not yet here.

But Fortnite has the capacity to rally and unite millions regardless. For its 10th season finale of Fortnite, Epic Games manufactured a narrative around pulling the game offline for maintenance. And the best preview of what a Metaverse might seem like was not the actual in-game event itself, but the millions of people excited and confused by it, says Jacob Navok, CEO of Genvid Technologies, a former Square Enix executive who works in cloud computing.

“When 2 million people watch the exact same event together, not in one room or a slightly different synchronized version but the same exact version of that event, that is the closest you can get to, in my opinion, the definition of the Metaverse,” Navok told The Post. “If you think about where these worlds are going, where the earliest formats of content are going to be, this is it. ... It’s going to be a mix of game engines, interactivity and video.”

The Metaverse must be built by something and someone, and the games industry has a significant skill advantage in leading the way. For years, game engines, the tools developers use to make games, have been used for more than just games. Game engines build the settings and backdrop for big budget Hollywood productions, most recently and notably “The Mandalorian,” Disney’s flagship TV show for its streaming service. The backdrops of “The Mandalorian” were built by the same tools Sweeney built in 1998: the Unreal Engine. In its fourth incarnation, the Unreal Engine powers hundreds of video games and media properties — including Fortnite.

Navok believes that the Metaverse will need a centralization of resources in a single server to combat current issues like latency and speed. But he agrees with Ball that game engines like Sweeney’s Unreal will fuel the Internet’s future.

“Client side processing will grow, therefore game engines will be the primary way in which people will have interfaces with content,” Navok said. Unreal and another engine, Unity, have a huge upper hand because of the familiarity and accessibility of their development interfaces, according to Navok. Easier, familiar tools makes for easier building. Navok said his former employer Square Enix, makers of the celebrated Final Fantasy franchise, was among the first to sign on for Unreal Engine 3 back in 2007. Executives, as many other developers have in the past, cited it as a way to expedite development and save on time and resources.

But there’s still an open debate about what the Metaverse infrastructure is going to look like, says Jason Rubin, Facebook’s vice president of special gaming initiatives.

“There’s going to be a Metaverse, and it’s not clear whether it’s going to be an open platform, or even one platform,” Rubin said at the DICE Summit in February, where gaming executives gather to chart the industry’s future. He added the ongoing debate about open or closed platforms is about the choice between more creativity or more control.

“Both sides are probably right,” Rubin said. “The arguments we should be having are, should we be more open than we are now, or should we be more closed than we are now? That would lead to a more rational discussion.”

Another discussion that needs to be had, according to Ball, is one around security. Ball says the time to worry and think about the Metaverse is now, given how the Internet disrupted the world’s economies, ushering in epochal change along with a host of new problems, like misinformation, harassment and the ease for extremist groups to organize online.

“It has the potential to make all of today’s problems much, much worse,” Ball said. “Think about how ISIS recruits. Their whole thing is they radicalize and brainwash through digital propaganda like beheadings on YouTube, and then bringing you to a site and then radicalizing you by preaching, training and poisoning your views of the West. In the ultimate version of the Metaverse, you don’t have to sneak into Syria and you no longer need your passport. And this would be a thing that’s going 24/7.”

Covid-19 could shape the Metaverse

The current pandemic may inspire more ideas contributing to the Metaverse, Ball said. Already, the crisis has drawn attention to gated off attempts to create smaller, focused Metaverse communities. A virtual reality church driven by a megachurch pastor in Pennsylvania has been in service for some years now, but has recently gained media attention due to the coronavirus crisis.

“This, whether in direct articulation or not, will drive a lot more funding [for the Metaverse], and thinking most of all,” Ball said.

The current swarm to an online-only social and capitalist economy has only highlighted the current Internet’s failings, and what the Metaverse needs to do, Ball said. Big sites like Facebook, Google and Amazon continue to dominate online activity, as do larger streaming services like YouTube and Netflix. But each location requires its own membership and has separate ecosystems.

“Right now, the digital world basically operates as though every restaurant and bar you go to requires a different ID card, has a different currency, requires their own dress codes and has their own units [of service and measurement],” Ball said. “It is clear that this really advantages the biggest services. People are just sticking to the big games, really. However there’s a clear argument that reducing network lock-in can really raise all boats here.”

Sweeney said as much in his DICE Summit keynote speech February. If the game industry wants to reshape the Internet and move away from Silicon Valley’s walled gardens, Sweeney stressed that publishers need to rethink economies in the same way email was standardized. In email’s early days, different companies would have proprietary messaging systems that only worked for internal communication.

“Somebody introduced the @ sign in email addresses, so now I can be Tim@Epic and I could talk to Tim@Microsoft or Tim@Sony,” Sweeney said. “That involved everybody with their own proprietary systems agreeing to connect to everybody else’s systems. ... This critically needs to happen in gaming. ... We need to give up our attempts to each create our own private walled gardens and private monopoly and agree to work together and recognize we’re all far better off if we connect our systems and grow our social graphs together.”

The Metaverse will also need a democratization of creativity, says Frederic Descamps, CEO of Manticore Games, a company that's created its own virtual space for creating and publishing games called Core. Like society, it will be built by people contributing their own ideas and skills to it.

"Everybody is looking at the Metaverse as something to experiment with and be in, but they never talk about the creation," said Descamps, the former general manager for Zynga, the company best known for its viral Facebook hit game, FarmVille. "Even in [the film] 'Ready, Player, One,' who actually made the Metaverse there? It will be all about the act of creation."

Descamps calls himself a pragmatist, but is also excited about the construction of the next Internet.

"It's bigger than all of us," he said. "Maybe it's the next hundred big opportunities moving forward."

The Metaverse may be decades away from being built. But as the world waits at home, quietly but slowly realizing the potential of a more robust, engaging online experience, Fortnite continues to lay the foundations of one, slowly but surely.

In the midst of the pandemic, April saw the launch of a new streaming service, Quibi, backed by investments from Disney, NBCUniversal and ViacomCBS. The company's marketing strategy included streaming its reboot of "Punk'd" starring Chance the Rapper to Fortnite players at the Risky Reels venue.

As players logged on to watch the show inside the game, other players started to build their forts to block the screen. Any openings left were pelted by tomatoes. It was a stark reminder that even though the Metaverse may evolve the Internet, the way we behave on it may not be so easily changed.